ORIGINS

• Journal of the Biblical Creation Society •

Volume 4 Number 11

In this issue:

Rocks and Scripture 4

Seeing and Believing 2

The Maker of Heaven & Earth

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Contents

		Page
Editorial	Nancy Darrall	1
The Maker of Heaven and Earth	John Benton	2
Review: **Evolution: A Theory in Crisis**	Sheena Tyler	6
Origin of Multicellular Animals	Paul Garner	7
Rocks and Scripture: **From The Flood to Babel**	Michael Garton	8
Creation in the News		14
Seeing and Believing – The Amazing Process of Human Vision	Sylvia Baker	16

News of Creation

The Fourth Creationist Congress		19
Operation Congo		20
The Back to Genesis Tour		21

Writing for Origins

Origins is looking for talented new writers, particularly those who have had experience in a specialised field of science or theology, in relation to creation, and who are in agreement with the aims and basis of the BCS. In addition writers in a popular vein are needed, but accuracy and solid content are still essential. Any manuscripts for consideration should ideally be typed, double-spaced and sent to the Editor. News items that may be of interest are also sought. We now welcome articles on disk in most formats, but 5 ″ DD, Wordperfect 4.2 is preferred; media will be returned after transfer of the file.

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Whilst **Origins** exists to further the aims of the Biblical Creation Society, opinions expressed in articles and signed editorials are not necessarily shared by either the Editorial Committee or the Society.

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Editorial

THE ANNUAL EVENT of 'Earth day' has been celebrated for two years now. The world is encouraged to pause and pay tribute to its common heritage, 'Mother Earth.' Activities are part of the effort to raise people's awareness of ecological issues and as stewards of God's world who are therefore accountable, we must welcome such initiatives.

However, the expression 'Mother Earth' may well raise alarm bells in the minds of Christians. Is nature a living being or a person or a living force so that we can justify the use of proper nouns and ascribe power and authority to that being? John Benton in his article 'The Maker of Heaven and Earth' provides us with a timely exposition of Scripture showing that the Creator and the creation are indeed quite separate and distinguishable in a number of specific ways which are detailed in his article. This article is the first in a series which is planned to cover the main sections of the Creation Manifesto, starting with the scriptural doctrine of creation. We look forward to other contributions in this area in the future.

'Seeing and Believing,' part 2, by Sylvia Baker further extends the arguments for a Creator from design. Although it contains many details of structure and function, it is written for the layman and unravels the complexities in a way that is easy to understand. The final part of this series will be appearing in the next issue of 'Origins.'

The second series of articles that we are publishing, 'Rocks and Scripture' also continues in this issue with part four. This considers the period of earth history between the universal flood and Babel. This article argues clearly for a period of much upheaval after Noah stepped from the ark. This is reflected in the promise of God in Genesis 8:21–21 which provided much needed assurance in the hostile environment.

> 'While the earth remains,
> Seedtime and harvest,
> And cold and heat,
> And summer and winter,
> And day and night
> Shall not cease.'

Also included in this issue is a short article by Paul Garner on multicellular animals in which he points out the complete lack of ancestors for these complex animals and the lack of any explanation 'as to why these varied basic animal types came into existence so explosively.'

On the subject of fossils, there is a short review of a series of slides which can be purchased from Dr. J. Scheven at the Creationist Museum, Hohenlimburg, Germany. Should readers be travelling through Europe, the museum, which is not far from Dusseldorf, is well worth a visit. It is the only one of its kind in Europe and contains examples of living fossils both as the fossil and the living form as well as many other exhibits; a short phone call or letter before visiting would be appreciated—monoglots need not feel left out, Dr. and Mrs Scheven and family speak excellent English!

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TRANSLATION: *Prehistoric World, D–5800 Hagen 5– Hohen Limburg, Unterm Hagen 22. Telephone to arrange a visit (010 49) 2334 42444). Entrance free! A scientific study-collection that starts with the creation and interprets the geological record of our earth with reference to the Flood.*

The Maker of Heaven and Earth

John E. Benton

'IN THE SILENCE they landed and pushed through the blossom ... till they stood on a little lawn of marvellous green ... then suddenly the Mole felt a great awe fall on him, an awe that turned his muscles to water, bowed his head, and rooted his feet to the ground. It was no panic or terror—indeed he felt wonderfully at peace and happy—but it was an awe that smote him and held him ... he knew it could only mean that some august Presence was very, very near ...

Trembling he ... raised his humble head; and then, in that utter clearness of the imminent dawn, while Nature, flushed with fulness of incredible colour, seemed to hold her breath for the event, he looked in the very eyes of the Friend and Helper ... All this he saw, for one moment breathless and intense, vivid on the morning sky; and still, as he looked he lived; and still, as he lived, he wondered. 'Rat,' he found breath to whisper, shaking. 'Are you afraid?' 'Afraid,' murmured Rat, his eyes shining with unutterable love. 'Afraid! Of Him? O never, never! And yet—and yet—O, Mole, I am afraid!' Then the two animals crouching to the earth bowed their heads and did worship.'[1]

Forgive that lengthy quote from Kenneth Graham's classic 'The Wind in the Willows' but the passage is not without significance. It describes something which many people experience when confronted by the wonder and beauty of creation. The natural world points beyond itself to something transcendent and 'other,' but which is at the same time awesomely present with us, and touches the human spirit. Such an experience leaves us humbled, fascinated and worshipful. Some people might put this down to Nature (with a capital N), or categorize it by the word 'numinous,' but Scripture would tell us that 'the whole earth is full of His glory' (Isaiah 6:3). It is not God Himself that we see in creation, but in creation we do perceive something of His glory.

Creation points beyond itself to the One who is other than creation and upon Whom all creation depends, and yet at the same time creation makes us feel that the 'august Presence is very, very near.' The twin truths of both the transcendence and the immanence of the Creator God are of vast importance.

God above all

'The distinction between the Creator and the creation is basic to Biblical thinking about the true nature of reality, as in Genesis 1:1.' So runs the wording of the Creation Manifesto. As we will note later in the paper, this distinction is of great importance in the current climate in which movements such as the New Age are claiming the unity of creation and the Creator. Nature and God are not synonymous.

1. Negatively

Before we look more carefully at the aspects which characterize that distinction, let us clarify our thinking by seeing what it is not.

Firstly, the distinction between the Creator and creation is not the same as that between the invisible and the visible. God's creative work is not co-extensive with the physical, observable universe, but extends to the creation of a spiritual world of angelic beings (Psalm 148:2,5; Colossians 1:16; Hebrews 1:7).

Secondly, the distinction is not to be confused with the distinction simply between the supernatural and the natural. Again, the angels possess supernatural powers, but their power is merely derived and is not the same as the power of the Almighty (Exodus 15:11).

Thirdly, the distinction between God and creation does not run along the same line as the moral distinction between the sinless and the sinful. There are angels who have never fallen and even those unfallen angelic attendants of the LORD feel bound to cover their faces as unworthy to look upon Him who is uncreated (Isaiah 6:2).

Classically reformed theologians have spoken of the differences between man and God in terms of God's communicable and incommunicable attributes. 'God is infinite, eternal and unchangeable,' says the Westminster Shorter Catechism, 'in His being, wisdom, power, holiness, justice, goodness and truth.' The characteristics listed after the word 'His' in that catechism answer are looked upon as being reflected in man (communicable) whereas infinity, eternity and immutability are regarded as things which cannot be denoted of man (incommunicable). This distinction is not without its uses as a rule of thumb, but cannot be properly defended as the essence of the distinction between us and our Creator.

Professor Donald Macleod, of the Free Church of Scotland College, has recently written, 'God is merciful which is deemed a communicable property. But the mercy itself is "infinite, eternal and unchangeable" and, as such, incommunicable. The same is true of all other so-called communicable attributes such as love, righteousness and faithfulness of God. On the other hand, to speak of omnipotence, omniscience and omnipresence as incommunicable is equally unsatisfactory. If we remove the prefix omni we are left simply with power, knowledge and presence, all of which have analogies in our own human existence.'[2]

The dictionary defines the word *transcendence* as 'existing apart from, not subject to the limitations of the natural universe.' Similarly, the word *other* is defined as 'separate in identity, distinct in kind.' We can rightly speak of the transcendence and otherness of the Creator. He is 'distinct in kind' from His creation, 'existing apart from' it and not subject to its limitations. But this is to specify the 'otherness' of God in terms merely of negation. To describe God's distinction from His creation more positively is a difficult business as the discussion of His communicable and incommunicable attributes indicates. We have to admit the logic of the fact that God's 'otherness' must finally be something which beggars our description by very definition. But we can say some things on this subject through what God has revealed to us about Himself.

2. Positively

The 'otherness' of God is conveyed by the familiar Bible word 'holy' (Heb.: qados; Gk : διοσ). We tend to think of this word firstly in terms of its ethical sense. But the word 'holy' in Scripture describes more than simply God's moral perfection. It stands too for His transcendence. It stands for His separateness not just from sin, but from His creation. Surely it is this which underlies the worship of the seraphim chanting, 'Holy, holy, holy' before the throne of the LORD (Isaiah 6:3).

God is other than us in the *mode of His being.* He is the fountain of life (Psalm 36:9). He has life in Himself (John 5:26). He is independent, self-sustaining, underived whereas we are the opposite of all those things. 'Who of us by worrying can add a single hour to his life?' (Matthew 6:27). He is present in all places at all times. Yet we are creatures very much of time and space. The manner of God's existence is alien to us. He moves in a sphere which is inaccessible to us and impenetrable to our science. The Bible calls attention repeatedly to man's creatureliness before the uncreated God. Not just as a sinner, but merely as 'flesh and blood' man cannot inherit the kingdom of God (1 Corinthians 15:50). And yet, the life of God has been made known to us in Jesus, the Son of God. 'The life appeared; we have seen it and testify to it' (1 John 1:2) and we are able, not to become as God in the mode of His existence, but to enter His kingdom and to share in His eternal life by the reception of the Holy Spirit (John 3:6; 6:63).

God is other than us in His *incomprehensibility.* The essence of God must always remain a mystery to us. Even the certainties of His character revealed to us in Scripture have to be held, in the words of Augustine as 'the fence around the mystery.' The fence keeps us from going outside and into error about God, but cannot exhaust the secret of what God is. The Creation Manifesto introduces the LORD as 'The Creator, ... the triune God of the Bible, without beginning and without end.' Although the Bible reveals clearly to us the doctrine of the Trinity, which of us can understand it? Who of us can fathom what it is that God is 'without beginning and without end?' The Creator ultimately lies beyond the understanding of the created. 'It is not only how big He is but the way that He is which defies our categories and transcends our understanding.'[3]

God is other than us in *His sovereignty.* He is supreme in every sense. He is the Most High. He wields authority over all things and is responsible only to Himself and to the dictates of His own character. All creation is under obligation to Him, the Maker of heaven and earth, and yet He is obligated only to Himself (Daniel 4:25). He is sovereign, not only in His authority but also in His power. As creatures we have power, but when we expend our power, we feel the decrease in our energy. Yet God is not like that. He exerts His power and yet is undiminished by it. 'The LORD is the everlasting God, the Creator of the ends of the earth. He will not grow tired or weary' (Isaiah 40:28). 'He who watches over Israel will neither slumber nor sleep' (Psalm 121:4). This in itself is difficult for us to come to terms with, and yet we are ultimately confounded by the fact that God's power is infinite in its possibilities. It is such that 'God created all things out of nothing' (Hebrews 11:3). God is He who 'gives life to the dead and calls things that are not as though they were' (Romans 4:17). 'Nothing is impossible with God' (Luke 1:37).

It is this 'eternal power' to which, in particular, creation witnesses. Professor Stephen Hawking, in his best-selling book, 'A Brief History of Time,' has proposed the possibility of a self-generating universe. But standing back from his discussion we realise that such a thing is an impossibility. Hawking's ideas, were we to accept them, can only be true given a certain framework of physical laws. We are still left asking, 'Why these laws and not others?' 'Where did the laws of physics come from?' Which, of course, is then equivalent to the original question, 'Where did the universe come from?' The exercise is interesting but ultimately answers nothing. The answer to the question which haunts mankind concerning origins can only finally be answered in terms of One who is other than creation. The world is intrinsically not self-explanatory, for reason can never explain the assumptions from which it starts its argument, the argument must always start somewhere. Creation really does speak of the transcendent Creator (Psalms 19:1–3). He is the good and necessary, inexplicable assumption.

God is other than us in His *impeccability.* Morally, God is unlike us. Not only is He not sinful, but it is impossible for Him to be tempted to sin. Although there is a paradox involved in the fact that Christ was truly tempted to sin (Hebrews 4:15), yet James spells out that 'God cannot be tempted by evil' (James 1:13). Unlike us, there is an underived moral purity in God which is inviolable. It is this which makes His eyes 'too pure to look on evil' (Hebrews 1:13), and His person to be light in which there is no darkness at all (1 John 1:5). There is an awefulness about the purity of the Presence of God which is unbearable even to perfect unfallen creatures (Isaiah 6:2). When the seraphim speak of how 'holy' God is, it is not just His otherness as the uncreated Creator of which they speak. It would seem that there is a moral distance between the Creator and even the unfallen creation.

The Bible tells us that the LORD looked upon His creation and 'God saw all that He had made and it was very good' (Genesis 1:31). 'The work of creation was therefore a complete, finished work, 'very good,' and without sin or any of its consequences.' And such an impeccable God is surely incapable of making any other kind of world. The origins of evil must lie outside of God and be a mystery to us.

We must also see that God's moral otherness means not only that He is negatively incapable of sin, but positively His goodness and generosity are other than we can comprehend or attain to. Not only is He the morally perfect God, but He is the generous God of love, who justifies the wicked' (Romans 4:5). Even His free grace is such as to shock us as it shocked the Pharisees (Luke 15:1,2). We could understand if we read in Scripture that 'God so loved His Son that He gave Him the world.' But what we actually read is that 'God so loved the world that He gave His one and only Son' (John 3:16). What is it that the Most High should become the Most Low upon Calvary's cross for us? (2 Corinthians 5:21). So unexpected is grace, that Paul says that to the world it appears as 'foolishness of God' (1 Corinthians 1:25).

God is transcendent and He is awesomely 'other' than we are. Encountering the presence of God, these things may terrify us in their unfamiliarity but the Creator also entrances and fascinates His creatures with His beauty and grace. We were made to glorify God and enjoy Him for ever. His creatures find their purpose and life in Him. The seraphim are no mere time-servers as they repeat 'Holy, holy, holy is the LORD Almighty.' This is the response of creatures consumed in love and worship. The psalmist too petitions God saying, 'One thing I ask of the LORD, this is what I seek: that I may dwell in the house of the LORD all the days of my life, to gaze upon the beauty of the LORD and to seek Him in His temple' (Psalm 27:4).

God very near

God's dwelling in heaven symbolizes for us His transcendence and heaven is more than a symbol as the ascension of the resurrected LORD Jesus bodily into heaven demonstrates. But Scripture not only teaches that God is far above us, it teaches too that God is very near. He is 'an ever-present help' (Psalm 46:2). He is not very far from each one of us. Indeed, Paul is prepared to endorse the statement of the poet Epimenides of Crete, 'For in Him we live and move and have our being' (Acts 17:28). Theologians therefore speak of the immanence of God. Though God is transcendent and separate from His creation, yet He permanently pervades His universe.

The Bible speaks sometimes of people being far from God. Adam and Eve were cast out of God's presence. The prodigal son rejected his father and travelled to a distant country (Luke 15:13). People are exhorted to return to God and He will return to them, to draw near to God and He will draw near to them (Malachi 3:7; Zechariah 1:3; James 4:8). But this is to use the metaphor of distance in a moral sense not an ontological or physical sense.

The immanence of God consists of three things.

Firstly, it consists of His *omnipresence*. The presence of God throughout His creation is not a mere philosophical construction, it is something which the Bible teaches (Jeremiah 23:24). It is expounded in Psalm 139:7–12. 'The psalmist realizes that he can evade God neither in space and time nor in eternity.'[4] Being ever present, God sees all things. This should disturb the sinner. But it is also a source of great assurance to the Christian. 'For the eyes of the LORD range throughout the earth to strengthen those whose hearts are fully committed to Him' (2 Chronicles 16:9). It is not possible for us to understand the mode of God's presence in His creation, but there are some distinctions to be made.

To say that God is everywhere is not to say that the manifestation of His presence is everywhere equal. Again, to say that God is everywhere present is not to say that He is 'savingly' present—there is a sense in which God is in the unbeliever, but He is not present as He is in the believer. Louis Berkhof helpfully explains 'that God is above space and fills every part of it with His whole Being. The last words are added in order to ward off the idea that God is diffused through space, so that one part of His being is present in one place, and another part in some other place.'[5] Omnipresence is not something which can be predicated of any of His creatures, visible or invisible. It is awesome. We live in God's presence, under His very eye.

Secondly, God's immanence consists in His *providence*. Not only is God present in His creation but He upholds and directs His universe. He does not take the role of a spectator; He is the grand player on the field of all existence. The Shorter Catechism summarizes the essentials as follows. 'God's works of providence are His most holy, wise and powerful preserving and governing all His creatures and all their actions' (Romans 11:36). God's providential government is not *ad hoc*. He works according to His pre-ordained plans (Ephesians 1:11).

The manner of God's control over His creation is again a mystery to us. He does so without impinging upon the significance of human decisions and without in any way being the author of evil or diminishing human responsibility. This control is absolutely necessary to the Creator God's moral integrity, as B. B. Warfield explains: 'The only justification for making anything is that we both can and will control it. If a man should manufacture a quantity of an unstable high explosive in the corridors of an orphan asylum, and when the stuff went off should seek to excuse himself by saying he could not control it, no one would count his excuse as valid. What right has he to manufacture it, we would say, unless he could control it? He relieves himself of none of the responsibility for the havoc wrought by pleading inability to control his creation. To suppose that God has made the universe—or even a single being—the control of which He renounces, is to accuse Him of similar immorality.'[6] Again, it is an awesome matter for us to realise that God is in control of our world and it is not He who is the spectator, but ultimately it is us who only look on.

Thirdly, God's immanence consists in His *glory*. The word glory translates the Greek δοξα and the Hebrew word *kabod*. Both seem to speak of radiance. When it is used of God in the Old Testament, it is not used of His essential nature, but the luminous manifestation of His person, His glorious revelation of Himself. This glory was seen in God's presence in the sanctuary in Jerusalem. It expresses itself in the acts of salvation history, but also we recognize God's glory in creation (Psalm 19:1; Isaiah 6:3). All creation is the handiwork of God and speaks of Him and of His ways. That is why Jesus was so easily able to draw upon nature in His parables. 'It would be wrong to assume that the parables which Jesus spoke were nothing more than homilectical inventions, not based on any deeper principles or law. It would be more correct to call them spiritual discoveries, because they are based on a certain parallelism between the two strata of creation, the natural and the spiritual (redemptive) one, because the universe has been thus constructed. On the principle of 'spiritual law in the natural world,' the nature-things and processes reflect as in a mirror the supernature-things, and it is not necessary for Jesus to invent illustrations.'[7]

There is no ultimate dislocation between creation and redemption, for the One God is both Creator and Redeemer and He is consistent to His own character in both His works. Redemption is new creation and creation shall be redeemed and at last transfigured with His glory (Romans 8:20,21). From Jesus's use of nature in His parables, we see that the eye of faith can see not just God's eternal power and Godhead in creation, but also trace the glorious ways of the Redeemer's grace. There is indeed something awesome about creation and to the Christian 'something lives in every hue, Christless eyes have never seen.'

Conclusion

The Christian view of Father, Son and Holy Spirit, one God, transcendent over all and yet immanent in all, makes God a living reality in a way which no other religion or system can. It and it alone puts God in proper relation to the world. Islam would see God as transcendent alone. If Rationalism will admit of a God, it can only take a similar view. To view God as purely transcendent will mean an inevitably distant God and a slide into Deism.

To see God as purely immanent is the way of Eastern thought, the God of the 'Greens,' the 'God' of the New Age. This leads necessarily to Pantheism with all its attendant moral confusion (for if everything is God, how can there be any difference ultimately between right and wrong?)

But, the Biblical idea of God is of One who is at once transcendent, separate from His creation, and yet at the same time immanent within it, not far from each of us. In the words of Griffith Thomas, Christianity 'is, therefore, the true protection of a living Theism.' But we must not conclude simply at the intellectual level. We began with Rat and Mole bowing their heads in awe and wonder at creation. As we see the greatness, not just of creation but of God, we have failed to grasp the truth unless we too are left in awe and worship, wonder, love and praise.

'Come, let us worship and bow down. Let us kneel before the LORD our Maker' (Psalm 95:6).

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4. MILNE, Bruce (1982) *Know the Truth.* IVP, London, 66.
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Slide review

REGULAR READERS of *Origins* will be acquainted with the work of Joachim Scheven. Dr. Scheven has dedicated his life to Creationist research and has established a splendid museum at Hagen, Germany. Recently Dr. Scheven offered a set of slides based on his research. These slides are concerned with fossil flora.

The quality of the slides is excellent, but the material provided is also of great service. There are twelve slides of Tertiary fossils which are complemented by a further twelve of identical contemporary plants. These are gathered from around the world and by careful orientation, Dr. Scheven has photographed them in a similar perspective to that seen in the fossils. This facilitates comparison. The viewer will be impressed with the lack of apparent development over tens of millions (supposed) years.

We are grateful to Dr. Scheven for these slides and trust that he will feel able to offer a similar set on the fauna. The slides cost DM 30.— (and can be paid by Eurocheque) and are available from Dr. J. Scheven, Lebendige Vorwelt, Unterm Hagen 22, D–5800 HAGEN 5, Germany.

JHJP

Reviews

Evolution: A Theory in Crisis. Michael Denton, Adler and Adler Inc., Bethesda, MD, USA, 1986, £17.50.

Reviewed by Sheena E. B. Tyler

EVOLUTION is a theory in crisis. So writes Michael Denton, who joins the ranks of non-Christian writers such as Gordon Rattray-Taylor marshalling the evidence against evolutionary theories.

A prominent theme is the preference that Denton has for the typological approach, whereby living things display discrete patterns of grouping. For example, he applies this in comparative anatomy to attack the ideas of vertebrate evolution from fish to man. He develops this theme in looking at homology. Those similarities linking the members of one class together also serve to distinguish that class unambiguously from all other classes. Homology thus provides evidence not for but against inheritance from a common ancestor. The problems extend into embryology: Denton clearly shows in diagrams how the early stages after fertilization differ so fundamentally between the vertebrate classes; homologous structures are often specified by non-homologous genetic systems and structures that appear homologous in adults arise from different sites in the embryos of various groups. A good, clear introduction to the method of grouping plants and animals according to similarity, cladistics, is also provided, although strictly speaking he describes only transformed cladistics. (The other school of cladistics is still firmly wedded to evolutionary theory). Cladism is a threat to evolutionary biology because no species are ancestral to one another and evolutionary sequences are irrelevant.

Denton deals ably with the fossil record by making a number of related points. Firstly, great searches were made after 1860 for the missing links. The Challenger's abyssal expedition of 1872 is described, which sought in the depths of the sea survivors of former geological ages. Secondly, he points out that newly-discovered fossil species could be placed in existing groups, or new, isolated ones that were not intermediate. All representatives of all major classes were characteristic of their class when they first appear in the fossil record. Denton makes the point that one or two potential intermediates is not enough: a large number of links need to be found in order to demonstrate the existence of the hundreds of transitions in form necessary to show evolution between major groups. Thirdly, he reminds readers that the soft biology of creatures is largely inaccessible to fossil study, except by taking cranial endocasts. In the case of Archæopteryx, the skull was found to be that of a bird. Fourthly, the great gulf in form between vertebrate classes is shown in drawings of various animals alongside their closest fossil relatives; for example, the earliest known amphibian is placed alongside the fish from which it supposedly evolved. The skeletal differences are dramatically obvious.

Denton considers that Darwin overstated the imperfection of the fossil record—the record was good enough then to test the plausibility of the theory.

The book is wide ranging in its scope, but it is in the realm of molecular biology that Denton particularly excels. His analogies of the cell with our most sophisticated technology are amongst the best in print. Take bacteria: 'a veritable micro-miniaturised factory containing thousands of exquisitely designed pieces of intricate molecular machinery, made up of one hundred thousand million atoms, far more complicated than any machine built by man and absolutely without parallel in the non-living world.' He talks also of the molecular machinery of coding systems of informational molecules, of catalytic devices and of feedback control. Primitive precursors to any such cell systems would be less than perfect and tend towards auto-destruction. In biochemistry too he finds clear evidence for typology. He also sees the trial and error processes of chance mutations as being unable to generate complex life forms that have all the appearance of an immense automated factory far exceeding the sophistication of our own technological world in the late Twentieth Century.

Early opposition to Darwin is shown to be not so much theological but scientific and empirical. The famous professor of zoology from Harvard, Agassiz, claimed that Darwin's connections were not founded on material relations. Cuvier was the founder of comparative anatomy: he considered, for example, the limbs of a carnivore to have a host of interrelated bone, muscle, tendon and claw structures and that any major evolutionary development of these integrated structures would be vastly improbable. Denton is very honest in facing up to Paley's divine watchmaker argument, which had been doubted by the philosopher Hume, in his comment that organisms were only superficially like machines.

With the revolution in molecular biology that is occurring today, the criticism that Hume advanced is invalidated and the analogy between organisms and advanced machines is made more convincing than ever. Rather than design being an *a priori* concept, Denton finds it an *a posteriori* induction with religious implications! Therefore, disappointing is his failure to conclude that such wonderful design surely invokes a Designer. It is not possible to glean his own opinions. Maybe the closest hint is in his contemplation of the origin of life. For Denton, this simply remains as much a mystery today as it was in the days of Darwin.

This is a good book for the intelligent layman. Denton communicates very well. Already, a number of Christians are drawing on much of his excellent material, but it comes at a price: such a quality book ought to be in paperback!

Origin of Multicellular Animals

A New Evolutionary Enigma

Paul Garner, B.Sc. (Geology and Biology)

CREATIONISTS have long highlighted the immense difficulty for the evolutionary model posed by the gulf in the fossil record separating unicellular microfossils and the first undoubted multicellular animals (*e.g*. Gish, 1972, pp. 67–70). However, recently new evidence has been found which casts further suspicion on evolution-based theories (Hecht, 1990).

Until now the 'oldest' known multicellular fossils have been the animals of the Precambrian Pound Quartzite of the Ediacara Hills, South Australia, and its equivalents. A thousand or so specimens have been recovered from this formation and others, and have been grouped into about thirty species including jellyfish, worms, soft corals, arthropods, echinoderms and some other forms entirely unlike anything now alive (Nield and Tucker, 1985, p. 13; Barnes, 1980, pp. 411–2). Other representatives of the 'Ediacaran fauna' are known from more than 25 sites throughout the world, including Newfoundland, England, Siberia and South Africa. Palæontological studies have shown that these are all complex creatures, and they clearly demonstrate the remarkable diversity of life-forms already in existence at the time that these Precambrian sediments were being deposited.

There are two major puzzles for the evolutionary geologist here, although I will only deal with one in any detail. The first enigma is the complete lack of ancestors for these complex animals, and as this has already been adequately dealt with elsewhere (Gish, 1985, pp. 57–61) I mention it only in passing. The second riddle for evolutionists—the one we are more concerned with here—is to furnish a convincing explanation as to why all these varied basic animal types came into existence so explosively. One suggested solution is that the Ediacaran fauna were only able to evolve as the earth's climate moderated following a succession of Precambrian ice ages. This hypothesis has always rested squarely on the interpretation of certain Precambrian 'mixtites' which underlie the Ediacaran beds as glacial deposits, and ignores the strong scientific evidence that these formations are of catastrophic non-glacial origin (see, for example, the comprehensive review by Schermerhorn, 1974). Moreover, fresh evidence has hammered another nail in the coffin of this particular hypothesis. Canadian geologists have unearthed many fossil casts of small sea anemone-like animals, similar to some creatures present in the known Ediacaran fauna. Interestingly, these fossils are present at a lower stratigraphic level than some of the supposed 'glacial' deposits, thus severely damaging the idea that amelioration of the Precambrian climate led to the relatively sudden appearance of complex multicellular animals.

In closing, there is a final point of interest for creationists: the very preservation of the intricate creatures that constitute the Ediacaran fauna indicates rapid superimposition of sediment. Likewise, Hecht (1990) comments that the newly discovered Canadian fossils were 'formed when strong submarine currents deposited sand on them.' Believers in the historicity of the Noachian Deluge (Genesis chapters 6–8) will recognize that such evidence is consistent with the idea that these animals were rapidly buried and fossilized during the initial phases of the Flood. Evolutionary biology and uniformitarian geology are contradicted at every point!

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Rocks and Scripture: From The Flood to Babel

Michael Garton

SCIENTIFIC THEORIES (such as the theory of evolution) are only abandoned if there is some alternative. When leading authorities can refer to the Darwinian theory as a twentieth century myth, we are justified in developing an alternative view of origins, an alternative 'paradigm.' Having already argued that great geological upheavals occurred after the Flood, in this issue I suggest the extent of this post-Flood activity.

The scientific need for a new model

The theory of organic evolution is in crisis (Denton 1985). Yet the history of science reveals that scientific theories are only abandoned when there is a conceivable alternative. In the absence of such an alternative, a theory will be defended with increasingly implausible rationalisations. As Kuhn notes: '... a scientific theory is declared invalid only if an alternative candidate is available to take its place.... The decision to reject one paradigm is always simultaneously the decision to accept another, and the judgement leading to that decision involves the comparison of both paradigms with nature and with each other' (Kuhn, 1970).

Whilst this limits the confidence which can be placed in scientific theories, there is a far more important dimension. Compared with other physical theories held in centuries past, no other 'raised as many new questions concerning religion and ethics as did Darwin's theory of evolution through natural selection.' (Mayr, 1970). If the cultural importance of evolution theory is truly immeasurable, if it is the crowning achievement of a naturalistic view of the world, and the final secular triumph over 'naïve' ideas from Genesis, then it is unlikely to be abandoned even though it is the cosmogenic myth of the twentieth century (see Denton 1985 pp. 357–8). We have run full square into the fact that the God's nature and power are clearly seen in the things that He has made (Romans 1:19–20).

The existence and character of God is implicit in most alternatives to current scientific theories for origins. That the evidence points towards 'special creation' or 'an intelligent creator' etc., is sometimes admitted, but considered incredulous, necessitating further rationalisation to maintain a theory for evolution. Defence of the evolutionary paradigm on these grounds (and the uniqueness of the debate compared with earlier revolutions in science) leads me to question the optimism of Forster and Marston (1990) that science will be self-correcting. Correction will only come with an alternative paradigm, which this series is seeking to develop.

The Evidence needs Reinterpreting

I am aware that some of the suggestions I have been presenting have pleased neither evolutionists nor creationists. It may be helpful to briefly review some of the reasons why evolutionary models have become increasingly unsatisfactory as knowledge increases.

Nothing illustrates more clearly just how intractable the problem of the origin of life has become than the fact that world authorities have suggested it might have been seeded from space (Crick and Orgel, 1973; Hoyle and Wickramasinghe,1981). The mathematical probability of life developing by chance amounts to virtual impossibility: the probability of the simplest cell forming by chance 'was virtually zero' (Monod, 1972, p. 136), or according to Hoyle and Wickramasinghe (1981, p. 24), 'outrageously small.'

Molecular biology is beginning to discover the complexity and perfection of design in living organisms. The information coded in them is analogous to other complex systems, such as computer programmes. The fact that such analogous systems cannot undergo evolution by pure trial and error and small gradual change comes very close to a formal disproof of the whole Darwinian paradigm of nature (Denton, 1985, p. 316; Lovtrup, 1989, p. 352). This is borne out by the earth's fossil record: Darwin's theory of organic evolution is not supported by fossils.

In recognition of this, Eldredge and Gould (1973) suggested 'punctuated equilibria'—evolution proceeds in fits and starts interspersed with long periods when a species continues unchanged. Hence there is little chance of a transitional form being found. This is one way of explaining the lack of species of intermediate form. At best it is only conceivable for small changes (*e.g.* between a rat and a mouse) whilst serving to highlight the discreteness of life, the lack of evidence for transition across major groups of plants or animals.

Turning to geology, the idea of long continued, gradual accumulation of sediment has been abandoned: most sedimentary rock layers evidence rapid deposition. To maintain belief in millions of years, one has to postulate that those years left no record of their passing, except for the occasional catastrophe or exceptional storm every thousand years or so.

Time is represented in the gaps between the layers, not in the rocks themselves. Geological time in the gaps is used to explain how a rock sequence which could have been deposited in hours/days/months can be made to represent vastly longer periods than the evidence suggests. As the rate of deposition has had to be recognised, so too has the extent of many rock layers (Ager 1982). There are no modern parallels. This focuses attention on the global control of sedimentation.

Divisions in Geological History

In developing a global, creationist model for the earth's history, it is necessary to distinguish evidence relating to particular events. Earlier articles suggested a number of conclusions.

1. The Flood of Noah came suddenly, and was of great geological significance. It was a truly awesome event. Everything was swept away. Every creature that breathed air was quickly destroyed. If not immediately, they were certainly dead inside 40 days (although the Flood lasted just over a year).
2. The earth's history (*i.e.* its geological history) is recorded in successive layers of rock. Vast sheets of rock wrap around the globe rather like successive (if incomplete) skins on an onion. Deciphering this history involves problems of geometry: what is the correct sequence of global layers.
3. In the third article I applied conclusions from the first and second. All flesh quickly perished in the Flood, yet in the global rock sequences, evidence of air breathers' footprints only occur in the uppermost, latest layers. Dead creatures do not walk! Hence layers bearing such fossil tracks can only be from::—
   i the initial days of the Flood (before the creatures were destroyed);
   ii after the Flood (when the creatures could have come out of the ark and multiplied again).

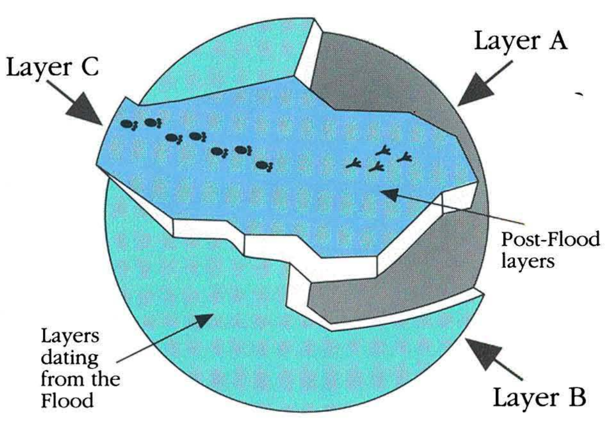


Figure 1: Successive layers of rock wrap around the globe like incomplete skins on an onion. These layers record particular, devastating events. Layers with tracks and footprints of air breathing creatures are only found in the upper part of the sequence.

To say these track-bearing layers, on the top of the sequence, are from the Flood would mean that nearly all the rock layers were formed in the first few days of the Flood. Decades of creationist research argue against this.

I suggested an inevitable conclusion: extensive rock layers must be post-Flood. In this article I seek to show that this post-Flood geological activity is reasonable if we are to be faithful to Scripture. Is it really possible that large areas of the continents were submerged again after the Flood? Would this mean that God did not keep His promise to Noah?

The Nature of the post-Flood layers

First of all, which layers of rock are post-Flood, and how extensive are they? Quite simply, it is all the layers which contain footprints/tracks which are the ones we are considering.

In the second article, I pointed out that the ('Carboniferous') coal series was a useful marker layer, extending 170 degrees around the Northern Hemisphere. It is also extensive south of the equator. It is within this coal series (or rock layers deposited just after it) that the first footprints of air breathing creatures are found, all over the world. A major topic for creation research should be to investigate which reptiles made the tracks. The initial ones were amphibians, which presumably survived the Flood. Subsequently, they were joined by reptiles that had bred prolifically as they spread out from the ark: which tracks can be identified as from the reptiles which had been with Noah?

Evolutionary theory notes how air breathing reptiles appear to come after amphibians. This is the supposed emergence of life from the sea: the evolving of amphibians to land reptiles. Without evidence that amphibians changed into anything, the evolutionist has to explain why aquatic creatures are joined by land creatures. Since all non-aquatic creatures were destroyed in the Flood, there must have been a time when only aquatic creatures remained, until the creatures in the ark came out under the Lord's blessing to be fruitful and multiply.

After this, desert conditions seem to have prevailed over vast areas of the globe, in a way never seen in previous or subsequent earth history. Shallow seas then started to spread over large areas of the continents. As the dinosaurs came to prominence (because conditions were peculiar and ideal for them) much of Britain, Southern Europe, the Middle East etc., was under a shallow sea, a sea that later deepened and became far more extensive. The white cliffs of Dover—the vast sheet of chalk—was being deposited from the prolific multiplication of trillions of little algæ. At their highest, the seas had risen to cover much of central North America and northern Africa, as well as central Europe.

Perhaps you will be asking how this could be: where were Noah and his descendants? From a European/American perspective, we see considerable thicknesses of sedimentary rock deposited from the shallow seas which covered much of our continents, and it becomes difficult to see how Noah survived. Worse, the very layers I refer to (the upper ones with all the fossils and tracks), are cited by the majority of creationists as Flood layers. If some of the evidence in support

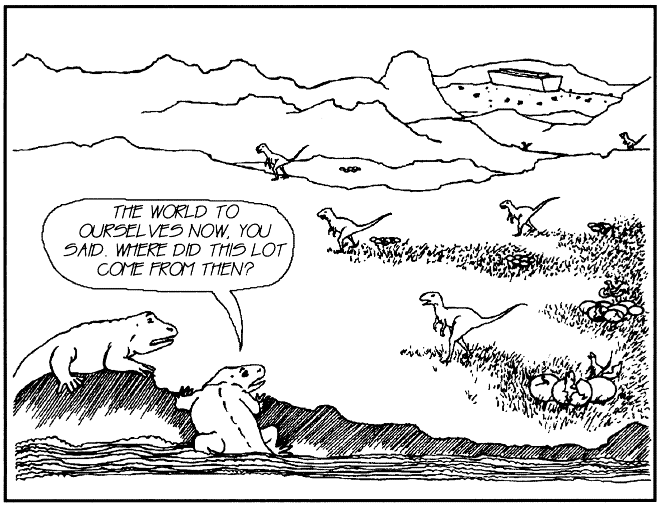

THE WORLD TO OURSELVES NOW, YOU SAID. WHERE DID THIS LOT COME FROM THEN?

Figure 2: Air breathing creatures survived the Flood with Noah, and afterwards multiplied abundantly and spread out from the ark. They spread out across the globe where the only remaining life were creatures in the sea. Evolution theory has to say the appearance of air breathing reptiles must mean aquatic creatures evolved into air breathers, without evidence for the transition.

of the Flood turns out to be post-Flood, we seem to have arrived at an impossible position. Surely, this would mean that God has broken His covenant to never again Flood the earth.

I have already issued a plea that creationists would look at a much broader canvas. The God of the whole earth has indeed promised that the waters of Noah will never again go over the earth (Isaiah 54:1–10). At the end of the Flood, God stated that the waters were dried up from off the earth (and Noah also looked out and saw that the ground was dry), Genesis 8:13. As we try to harmonize theology and science, we need to reconcile this verse to geological history: was there a time when the waters were dried up from off the earth? Can geology help us to distinguish whether the continents were flooded, or above the sea?

The extent of post-Flood layers

Rocks originally laid down under the sea have certain characteristics which we can still recognise today. Layers from under the sea might contain marine fossils, or preserve ripple marks characteristic of water. Conversely, layers deposited on land can also have distinguishing features: *e.g.* desiccation (mud) cracks where the surface has dried out; wind blown sand dunes (familiar from pictures of modern deserts) can be recognised in ancient sedimentary rocks around the world. We can also investigate whether there is any evidence that the sea has ever covered a particular area. We conducted such geological detective work in the second article, and concluded that a great layer of chalk (and hence also the sea that formed it as well) once extended over most of Great Britain.

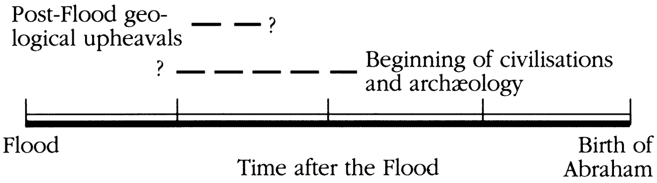
Figures 3 and 4 are an attempt to compile such geological evidence from around the world, for different times in history. If the widespread coal series marks the end of the Flood, we should expect the waters to have receded off the continents at about this time. Geology testifies to this. Figure 3 is drawn from what I suggest is a few decades later, and shows how the continents remained above the sea.

Then, as the dinosaurs were rising in numbers and prominence, we see the encroaching of shallow seas. When the Dover chalk was forming, they reached their highest post-Flood level all over the world. However, large regions on all continents remained above sea level.

Now we must make some distinctions. Even when the shallow seas were at their most extensive, vast regions remained above sea level, notably most of Southern Africa and much of the Far East. Hence in extent these seas were quite different from the waters of Noah, when all the high hills under the whole heaven were under water. More important, they were of different character (remember the violence of the Flood waters, especially in the initial 40 days, and the subsequent 110 days—see Article 1). A later article will contrast the speed, scale and force of the awesome Flood events compared with post-Flood seas. It is no wonder that the Flood blotted out/destroyed every living substance: what came after was far less severe—the layers replete with the tracks and remains (fossils) of post-Flood creatures.

Earth upheaval, and Origin of Language

I have suggested that extensive geological upheavals occurred after the Flood, and before civilisations could be established. By the time of Abraham, we know that civilisations had begun to develop. To what extent do geology and archæology overlap?


Post-Flood geological upheavals
?
?
Beginning of civilisations and archæology
Flood
Time after the Flood
Birth of Abraham

After the Flood, but before the birth of Abraham, Scripture highlights two people, and two events. A godly man named Peleg, and perhaps the most evil man who has so far walked on the earth—Nimrod.

Peleg and the dividing of the earth

Nimrod is associated with the building of the tower of Babel and the confusion of language, (Genesis 10:8–10 & 11:1–9). Peleg was given his name (which means 'division') because, 'in his days the earth was divided,' (Genesis 10:25, 1 Chronicles 1:19). We have to decide how these two scriptural events are related.

The jig-saw like fit of the continent margins, and their geology, encourages us to interpret the dividing of the earth to be a literal movement of continents. Geologists have long suggested that the continents were once all assembled together (see Figure 3). Some of the layers with tracks and

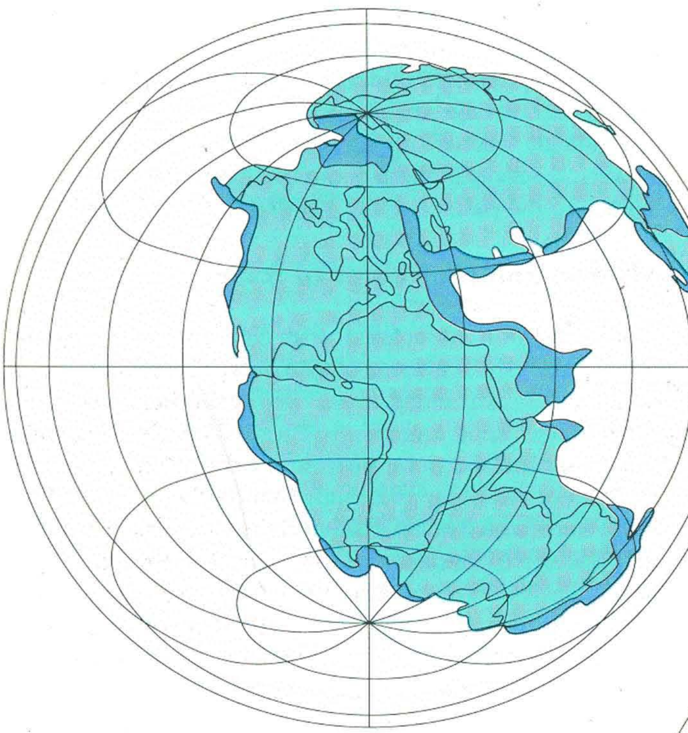


Figure 3. The earth a few decades after the end of the Flood ('Middle Triassic'). These diagrams use conventional geological data adjusted to a time scale suggested by the genealogies in Genesis. Adapted from Nance, Worsley and Moody (1988).

🟦 Continental land masses

🟦 Shallow seas upon the continents

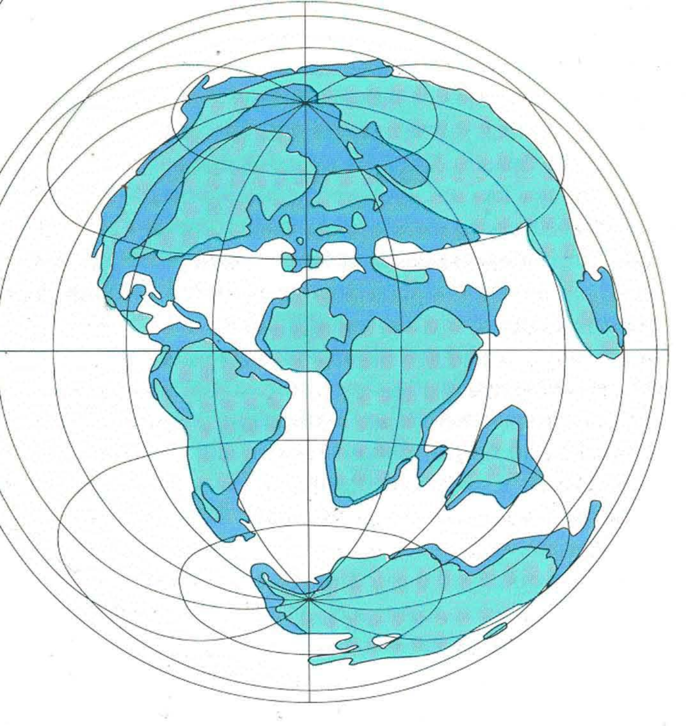


Figure 4. The earth at the time of maximum post-Flood invasion of the seas upon the continents. The Atlantic Ocean was still widening, and Africa and India had not yet collided with Europe and Asia: the Alpine–Himalaya mountains had yet to form. About 130 years after the Flood, at the time of deposition of the Dover chalk ('Upper Cretaceous').

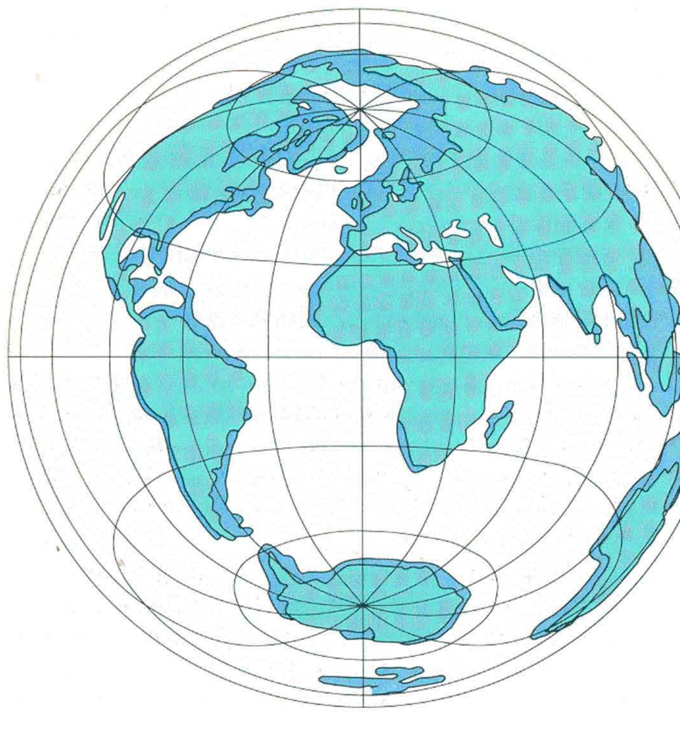
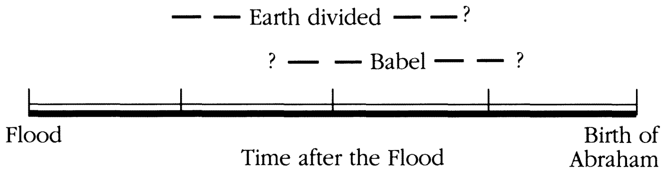


Figure 5. The earth today. Although the continents had been partially submerged again when continental division occurred after the Flood. The slowing down of continental movement before Abraham was born lead to the deepening of the oceans, and a draining of the water back into the oceans. Today, most of the water has drained back off the continents.

footprints, the post-Flood layers, are disrupted by the division of this supercontinent. This conveniently dates the break up as after the Flood. Peleg was born at the time we would have expected the continents to have divided.



Commentaries often baulk at taking this at face value—that the earth (the continents) were actually separated during this time, that 'continental drift' is in the Bible. It seems easier to relate division to the confusion/dividing of tongues at Babel. However, the Hebrew fits better as a literal continental division, during Peleg's lifetime. It is well illustrated by the break up of the post-Flood supercontinent in Figures 3 and 4.

This dividing of the earth occurred over a period of time: 'in his days...' That is, continental separation did not take place catastrophically. Contrast this with the dramatic beginning of the Flood, Genesis 7:11. This suggests that the opening of the Atlantic and Indian Oceans, etc, occurred over Peleg's life time (239 years). He was born at least 101 years after the Flood. The division was completed before Abraham was born. These are important constraints to apply to geology, in seeking to harmonize science and theology.

If we apply geological principles, but on a Biblical time scale, we shall find that we not only understand why the continents were partially flooded during the lifetime of Peleg (Fig. 4), but also why the water subsequently drained away.

Evolutionary geologists agree that a rapid separation of the continents would lead to a temporary shallowing of the oceans. Conversely, a slow down of continental movement leads to a deepening of the oceans. Let me explain the theory by considering what happened. As the continents moved apart, new oceans formed in between. Molten rock from deep within the earth had to flow up to fill the space. The faster the separation, the more this upwelling of hot material ('magma') would have elevated the sea bed: this is why the new oceans became shallower. The displaced water had to go somewhere: it spilt over onto the continents, forming the shallow seas of Fig. 4. If the new ocean forms more slowly, (*i.e.* continental movement slows down), there is less upwelling of molten material, the ocean deepens and the seas regress from the land.

I have suggested that continental division occurred in about 200 years. More important, continental division all but stopped before Abraham was born. As continental movement slowed down, the upwelling of molten rock also slowed down. This in turn allowed the oceans to deepen again, draining the continents. We can understand why the shallow seas became so extensive during the lifetime of Peleg, and why the water returned back to the oceans (Figure 5).

Precise measurements using satellites and radio signals from quasars are yet to confirm if the oceans are still widening. If it turns out that there is still a residual movement occurring, it would be quite erroneous to extrapolate that tiny rate back millions of years and conclude that it has taken over 100 million years for the Atlantic Ocean to open up (2 Peter 3:4). The Atlantic opened up in about 200 years. Present day geological activity in these oceans may be a clue, but it is not the key to the past.

Nimrod and the Tower of Babel

The division associated with Peleg has geological implications. The scattering of man over the earth after Babel has archæological implications. Before Babel, most of the human race kept together (Genesis 11:2): most human remains around the globe are from after Babel. I have already suggested that all air breathing creatures from before the Flood were blotted out of existence; if men kept together until after Babel, we can understand why most of the earth's rock layers are devoid of human fossils. This also explains why archæology appears to have little overlap with geology, even though man has been on the earth since the beginning. The rare anomalies suggesting otherwise cannot be accommodated in an evolutionary paradigm.

The scattering of man after Babel marks the time after which human remains are more likely to be found around the globe. We have seen that this is towards the end of the earth's 'geological history.' Is it possible to decide which rock layers around the earth formed before Babel?

The dividing of the continents was associated with the shallow seas which developed throughout the Middle East (and which generated the Arab oil reserves). The presence of these shallow seas is important, influencing the possible date, or site, of Babel. If that city was built in the Iraq region, we must remember that the area was under water until late in the earth's history. We have two choices:

1. The city and tower were built before extensive geological activity had finished: Babel could not have been located anywhere in the Middle East. Such a suggestion should not be lightly dismissed.
2. Most geological activity (except the 'Ice Age') was over, and the site of Babel could be somewhere near Babylon, as claimed by archæologists.

I can only tentatively suggest the site of Babel is to be found around Babylon, in modern Iraq. It was surely more than confusion which caused the rebels to leave the project and the area. Twice, Scripture emphasises it was the Lord who scattered them abroad, upon the face of the earth (Genesis 11:8–9). However, whatever agency the Lord used, the geography of the region may not have been altered. The city is not said to have been destroyed. The project seems to have been abandoned, 'They left off to build the city' (Genesis 11:8). Further, we do seem to know the site of one of Nimrod's adjacent cities, as it is referred to in Amos 6:2.

Archæologists will want to know how far back into history their subject goes. The first article established that nothing remains to the archæologist of the pre-Flood world. The building of Babel is the earliest record of the building of a city, after the Flood. Figure 4 shows that the Middle East was one of the last regions from which the shallow seas drained away from. If Babel was built in the Middle East, then the sea which invaded that region must have gone. The earth's geological history must have essentially been over.

Contrary to Scripture?

God certainly keeps His covenants. Yet He is prepared, it seems, to go to the very limit with rebellious people, such that it may appear He has all but forgotten those covenants. The history of Israel (from Abraham to the present day) illustrates this time and again. An extreme example was when God said He was prepared to blot out all Israel, and raise descendants afresh by Moses (Exodus 32:10).

The post-Flood world was certainly geologically unstable. Noah and his descendants must have endured the most fearsome earthquakes and experienced awesome geological activity. The violent legends and stories of the gods, (*e.g.* the Greek myths) were probably inspired by these events. The Alpine–Himalaya mountain chain was thrown up at the end of this period. There was also the continual memory of the Flood just a few years previously, and the account Noah's family would have given of the world that had been, but perished. To us, the rainbow is but nothing. But God is economical with His words. (*e.g.* If He says, 'Fear not,' you can be sure there would otherwise be every reason to fear!) When the Lord gave Noah the covenant with the sign of the rainbow, He emphasised the word 'covenant' seven times (Genesis 9).

Why the seven fold emphasis? To Noah's descendants it was the promise they must have clung to despite the terrible shaking of the earth, the shifting seas, the volcanoes (which would have made the eruption of Krakatoa, Indonesia, in 1883 look like a pea shooter!). That rainbow was vital! God is, and He will never do it again: not by water.

As geological activity was quietening down, they came to the plain of Shinar. They were still together, and still journeying (Genesis 11:2). This is certainly sympathetic to the geological picture I have painted. They are said to have been travelling from the east. The Far East had been one of the most stable regions where the changing shorelines could be avoided, as Figure 3 shows.

When we go on to discuss the speed of deposition and nature of the Flood layers, it will also draw a sharper contrast with what came after and uphold the severity of the Flood as Scripture records it.

From the Flood to Stonehenge

After the Flood, the continents were all assembled together, but in the time of Peleg at least one hundred years later, the earth was divided, and the Atlantic and Indian Oceans opened up in about 200 years. This continental division generated extensive shallow seas which invaded parts of the continents. Subsequent slowing down of continental movement allowed the oceans to deepen, and the water to drain back off the continents. This continental transgression, and regression, of water lead to many peculiar, temporary environments. These were explosively colonised for a short time by various creatures, from dinosaurs to mussels. The temporary environments are also reflected in many unique post-Flood rock layers, before the regression which facilitated the building of the city and tower of Babel.

Men of great skill, but wicked intent, were scattered across the earth after Babel. It is to their knowledge that we can ascribe the genius of building projects like the great pyramids, or Stonehenge. They brought with them confused stories about the Flood, and some knowledge of the occult practices of Babel. The worldwide similarity in astrological schemes doubtless has some root that can be traced back to Babel.

The geological model presented here needs testing: do the earth's sedimentary layers truly reflect partial layers of an onion? Are tracks only found in the upper layers? Can the differing groups of fossils after the amphibians (dinosaurs etc.) be explained as migrations and population explosions of animals that came out of the ark? Is there a contrast between the structure of mountains which formed extremely fast in the Flood (*e.g.* in Scotland and Norway) compared with those that formed more slowly (the Alpine–Himalaya chain), associated with the opening of the oceans during Peleg's lifetime? And there is the acid test of any model incorporating the Flood: is there any Flood deposit which took longer than a year to form, so invalidating the whole young earth creationist concept?

When Durant (1980) said, 'Darwin's evolutionary explanation of the origin of man has been transformed into a modern myth, to the detriment of science and social progress,' could the same be said of the creationist paradigm outlined here? It is precisely because I have found this model such a stimulus to research, such a release from the evolutionary mind set and such an aid to prediction and discovery that this series came into being.

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Creation in the News

Lamarck's New Clothes

'LAMARCKISM' is the school of evolutionary thought that says that a creature can adapt to changes in its environment and then pass that adaptation on, giving its offspring a better start in life. This contrasts with the Neo-Darwinian teaching that change occurs due to random genetic mutations present at birth, some of which confer a survival advantage.

Up until his death in 1953 Trofim Lysenko had the last word in Soviet Genetics and that word was Lamarckism. This contrasted with the West which had apparently convinced itself that random mutation was the source of new and useful genetic information. August Weissmann had published his investigation of acquired traits as early as 1891. He had cut off the tails of some 900 mice through five generations, and not one pair had produced tail-less offspring. He also pointed out that circumcision had been practiced since Old-Testament times and yet no Jewish boy had ever been born not needing it. It may seem naive now to test the theory in such a manner, but the role of the cell nucleus was not known at the time.

But perhaps directed adaptation is possible at the cellular level? In 'A Fitter Theory of Evolution' (New Scientist 21st September 1991, pp30-34), Emeritus Professor of Microbial Genetics Neville Symonds examined the latest controversy over the subject. But, as he does, let us examine the evidence in historical order. In the 1940's, Salvador Luria working at Indiana University came up with the fluctuation test. Basically this showed that in a population of bacteria (Escherichia coli, E. coli in the trade) that could develop resistance to a virus (T1), the statistics were those of purely random mutations, rather than adaptation directed at countering a detected threat. So again Lamarckism was discredited. However, the theory has an inexorable draw, as we are all aware that the randomness of everyday life makes a mess of ordered systems, rather than helping them to improve. What if the stimulus did not lead to rapid death, as in the case of the virus, but was mild enough to give the organism time to come up with a response?

In the early 1950's and 60's Francis Ryan investigated whether the cells of a bacterium need to be growing before useful mutations can occur. One strain of E. Coli, his–, cannot synthesize the amino acid histidine which stops it growing rather than killing it. A mutation was known that corrected this, producing a his+ strain. Starting with only his- bacteria after a couple of days one in five populations were converted to his+ and growing normally, complying with orthodox random mutagenesis. However, when left for several weeks, an unusual 'late' mutation was occurring in cells that were not growing. He went on to carefully establish that indeed 'resting' cells were mutating to his+, and not ones that were just dividing slowly. Luria had shown that growing bacteria mutate as expected, Ryan had discovered a new process in dormant organisms, but it was ignored for thirty years. If he had not died in 1963 perhaps the story would have been different.

In 1988 John Cairns, Julie Overbaue and Stephen Miller focussed in on the process. They set out to determine whether late mutations were randomly distributed across the whole of the DNA or whether they were specific to those sections which 'solved the problem'. They again established that mutations seemed to occur in the absence of conventional DNA replication, and indeed they were specific, in this case converting a lac– strain, that cannot break down lactose, to lac+, that can do so. Early criticism of the conclusions was laid to rest after two years by the rediscovery of Ryan's work, that showed that true resting cells could mutate, rather than a hidden minority of cells that were able to grow by obscure means.

Barry Hall of New York's Rochester University added to the controversy by investigating a form of E. Coli that was defective in two genes, trpA and trpB that prevented it breaking down the amino acid tryptophan. Thus in a tryptophan based medium this E. Coli strain cannot grow. This situation requires both genes to be repaired by mutation, and this occurred 100 million times more often than random statistics would predict. It seems that the special mechanism only starts up under the harshest conditions. In this case only after the populations had been starved for twenty days.

Symonds reviews the various attempts that have been made to explain these results away in terms of orthodox theory, but by now many readers may be thinking, ' but what has this to do with Creationism?' Let us consider his last paragraph.

'In making sense of directed mutations, one thing should be born in mind: geneticists may be experts in manipulating growing bacteria but they are still novices in dealing with bacteria at rest—their natural state in soil, water and the gut. Many surprising findings are likely as they acquire this expertise; but in the meantime we should treat all results with caution. At the same time, biologists need no longer be alarmed at the mere notion of directed mutagenesis, for cells are almost certain to possess enzymes capable of altering genetic structure in the absence of cell division—the key to finding an orthodox explanation of the phenomenon. Once heralded a blasphemy, Lamarckian adaptation may eventually be seen as an inevitable consequence of molecular genetics.'

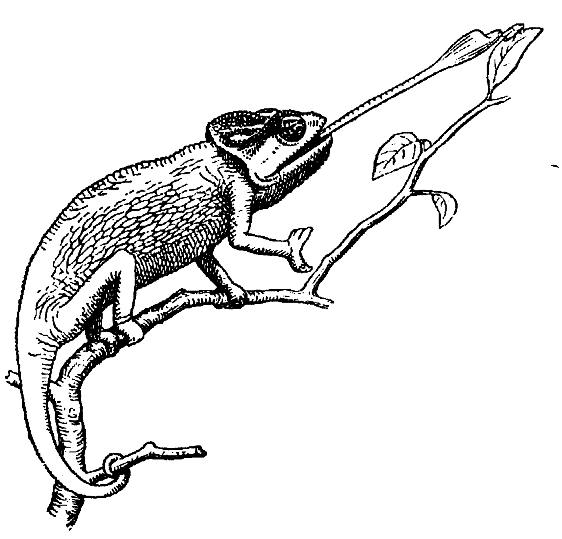
So what can we say?

1 For all their dogmatism about Neo-Darwinism, top class geneticists are aware that random processes are not enough.

2 All the above examples were about putting right defects, not producing something new. Indeed, if thought through, the principles above would lead to a conventionally mutating creature reverting to type, just when it *might* have become something new. This is experienced by animal breeders when they are trying to push a particular trait to extremes.

3 The blithe way in which purposeful mechanisms are discussed, without any reference to intelligent design. The chemist has to persistently exert himself to redirect the inexorable rise in entropy in his experiments in order to preserve the purity or even stability of his reaction products. What an immense gulf there is between him and the biochemist who (with a little poetic licence) just has to sit back and 'let mother nature take her course.' We must remember at all times that this is a result of the spiritual blindness that only the Holy Spirit can remove. So many complex chemicals can now be more economically produced by manipulating the genetic programming of micro-organisms. It is incredible that the world sees huge chemical plants with all the intelligence and purpose that went into their design, being superseded by slightly modified tiny cells, and it does not give due credit to the designer of the miracle of microminiaturisation that puts the silicon chip to shame.

PS



A Critique of Chemical Evolution

MANY EVOLUTIONISTS assume and teach that the chemical basis of the origin of life has been solved. Creationist reviews[1] have shown that this assumption is without foundation. A study of basic chemical principles (for example, those established at 'A' level) can be used to demonstrate the futility of the exercise.

The whole postulated system is scientifically flawed. Even if a substantial polymeric molecule (*e.g.* protein or DNA fragment) could be produced under valid conditions, information theory shows that the result would not be meaningful.[2]

It is encouraging, therefore, to see an honest, non-Creationist appraisal of the subject in 'Scientific American.'[3] John Horgan gives a thorough survey (up to date) of the various models proposed and demonstrates their fundamental weaknesses. It is forty years since Stanley Miller published his paper[4] which many assume to be the answer to the problem. He still believes that the origin of life is a problem that can be reproduced by humans, though he doesn't explain how chance succeeded where scientists have so far failed!

The review is well-written and, even though written from an evolutionary perspective, is recommended reading for creationists.

JHJP

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Seeing and Believing –

The Amazing Process of Human Vision

Sylvia Baker

THE PAST forty years has seen a rapid unfolding of knowledge as to how the process of human vision works. This is not to imply that we know all that there is to know. On the contrary, what has been discovered is only the tip of the iceberg, just the first tiny glimmers of understanding. Nevertheless, what we now know is amazing and extraordinary. Often what we find is not what we would have predicted and the research workers in the field of vertebrate vision tend to speak in tones of wonder and awe of the things that they are discovering.

This should not surprise us. We have already seen in Romans 1 that God's eternal power and divine nature can be clearly seen in the things that have been made. Surely it is no coincidence that with the explosion of scientific knowledge of the past 200 years has also come a theory, the theory of evolution, which seeks to eliminate God from the reckoning and to divorce Him from science altogether. Otherwise, the new knowledge would enable us to see Him better than ever before! There is clearly a spiritual battle involved and an enemy who is determined to prevent men from knowing God.

The structures of the eye that we have considered up to now could be thought of as together having one main function—that of keeping a clear image of the outside world focused securely on to the two retinas. It has been known for a long time that the retina has a very complex structure. We now realise something of the reason for that complexity. The retina is analysing the information coming in before it sends its messages on to the brain. It is in the retina that the whole process of 'seeing' first begins.

As you can see from Figure 1, the retina consists of three layers of nerve cell bodies. The layer right at the back contains the light receptors, the rods and cones. These are the cells that are going to absorb the light and make a response to it. The incoming light therefore has to go through the other two layers in order to reach the rods and cones. Since this strange arrangement has not arisen by chance, but has been planned and designed by the Creator there must be a good reason for it. One possible reason can be found in the row of cells behind the rods and cones. These contain the black pigment melanin, which mops up the light that has passed through the retina, keeping it from being reflected back and scattering around inside the eye. The melanin-containing cells also help to chemically restore the pigment in the receptors after it has been bleached by the light. For both functions the melanin must be close to the receptors. It seems that the two layers which lie in front of the rods and cones are fairly transparent and therefore do not blur the image much. There is one point on the retina, however, where our vision needs to be exceptionally clear and acute. This is the fovea, a tiny region at the very centre of the retina consisting entirely of cones. When we look carefully at something, it is on to the fovea that we are trying to focus

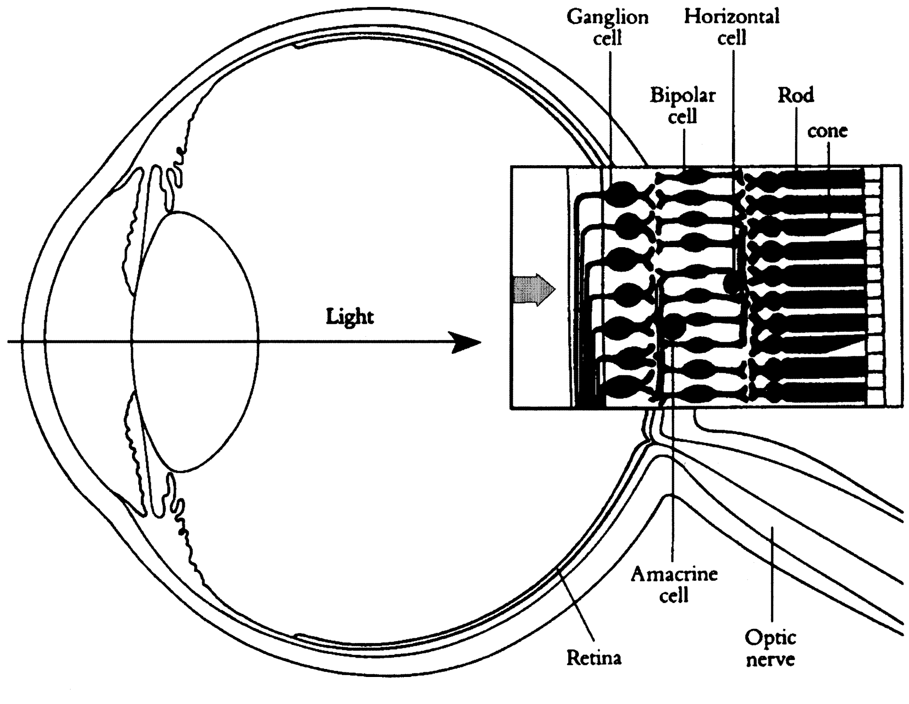

Figure 1

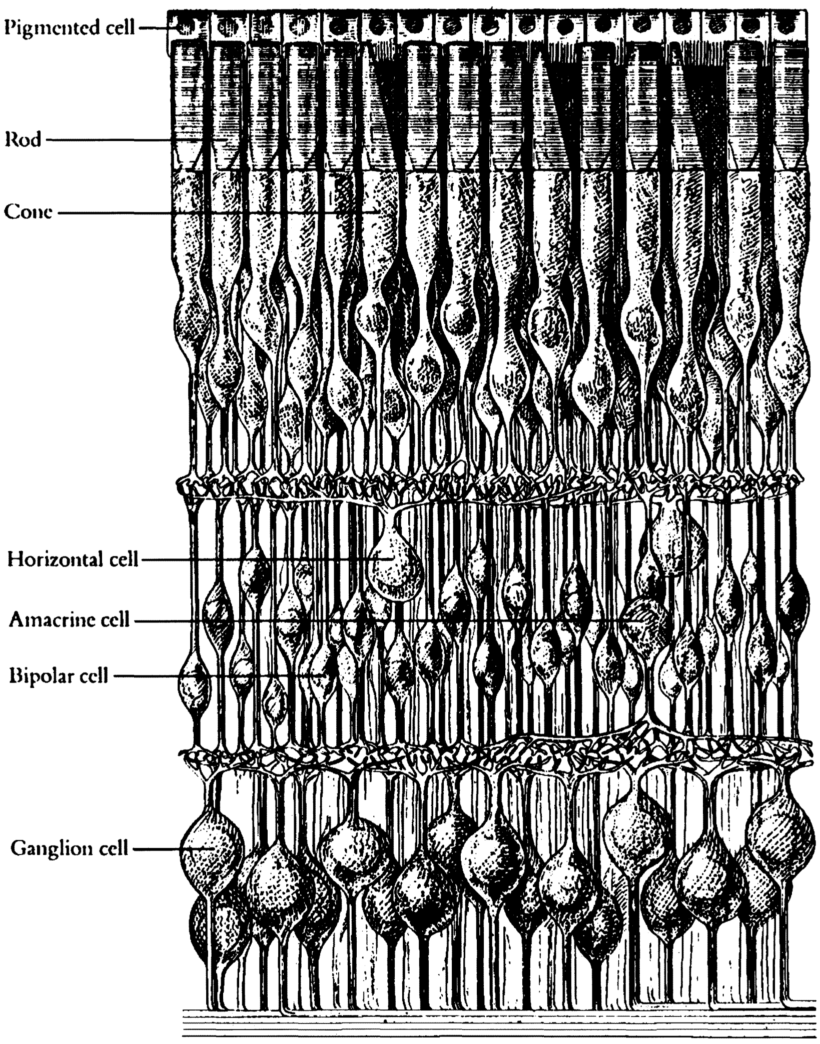

Figure 2

it. At this point, the other layers are displaced to the side so that the cones of the fovea lie right at the front.

The rods and cones contain different types of photosensitive pigment. The rods are 500 times more sensitive to light than the cones. They function in dim light and give vision only of shades of grey. There are 120 million rods in each human eye, lying all over the retina except in the fovea and in the blind spot, the point at which the optic nerve leaves the eye at the start of its journey to the brain.

The cones contain the pigments that make colour vision possible, and they function in bright light, whether daylight or artificial light. There are three different types of cones, each containing a different pigment. Whether we see an object as white or coloured depends primarily on which of the 3 cone types are activated. Colour is a consequence of unequal stimulation of the 3 types of cones. When all three are stimulated about equally, the resulting sensation turns out to be white. There are about six million cones in each eye. The fovea consists entirely of cones at very high density—about 150,000 cones per square millimetre. 120 million rods together with 6 million cones gives us 126 million receptors in each eye. As machinery, this far outclasses anything that is man-made. A TV camera usually produces a picture of only about 400,000 spots.

800,000 nerve fibres leave each eye. That is, the ratio of receptors to optic nerve fibres is about 15:1. As we shall see, the message that the light has brought to the eye will be analyzed by other cells before it leaves the retina. What exactly happens to the rods and cones when the light strikes them? How are they able to change light into nerve messages? The pigments that they contain have the special property that when they absorb a photon of light they change their molecular shape and at the same time release energy. The pigment molecule in its new form will generally have quite different light-absorbing properties. Complex chemical machinery in the eye will now restore the pigment to its original form. In the meantime, by a complex process which is now at least partly understood, the receptor has passed a signal on to a cell in the next layer in the retina.

Figure 2 shows the cells that are present in the middle layer of the retina. There are 3 different types: bipolar cells, horizontal cells and amacrine cells. The third layer contains a different type again, retinal ganglion cells.

Bipolar cells receive input from the rods and cones and many of them feed directly onto retinal ganglion cells. Horizontal cells link receptors and bipolar cells, while amacrine cells link bipolar cells and retinal ganglion cells. There are 126 million rods and cones but only 1 million ganglion cells. In and near the fovea, it seems that a single cone feeds a single bipolar cell and a single bipolar cell feeds into 1 ganglion cell. As we move out from the fovea, however, several receptors will converge on to each bipolar cell and several bipolar cells will converge on to each ganglion cell.

This arrangement had been known about for many years before there was any chance of understanding what the significance of it all was. In about 1950 experiments began to be done which were radically to alter our understanding of how the retina works.

Stephen Kuffler, working with the cat, became the first to record the responses of mammalian ganglion cells. He used a device which enabled him to flood the retina with steady weak background light or else to project bright spots of light on to the retina. He then measured the response of individual ganglion cells. The way that this was done was that a micro-electrode, made of a very fine insulated wire was inserted near enough to the cell to pick up its electrical signals. When a nerve cell is at rest, there is still some electrical activity that can be measured and this spontaneous level of firing increases as the cell is stimulated. The results of Keffler's first experiments were very surprising.

You would have expected that flooding the retina with light would have produced the greatest response from the retinal ganglion cells, but this was far from the case. The greatest response was obtained with spots of light, but only if they were of very specific sizes and in very specific positions. The patch of receptor cells which can influence any particular ganglion cell has become known as the 'receptive field' of that ganglion cell. Eventually it was realised that there were two main types of retinal ganglion cells, demonstrated by the two different types of receptive field shown in Figure 3.

With an 'on-centre' type of cell, if a small spot of light was shone near the centre of the receptive field, the cell would increase its rate of firing. If the spot of light was moved a short distance away, not only did this increase in the rate of firing stop, but the cell's spontaneous level of firing was actually reduced. That is, it fired less than if there was no light at all! When the light was turned off, there was a brisk burst of impulses lasting about 1 second. The receptive field proved to be cleanly subdivided into a circular 'on' region surrounded by a much larger ring-shaped 'off' region.

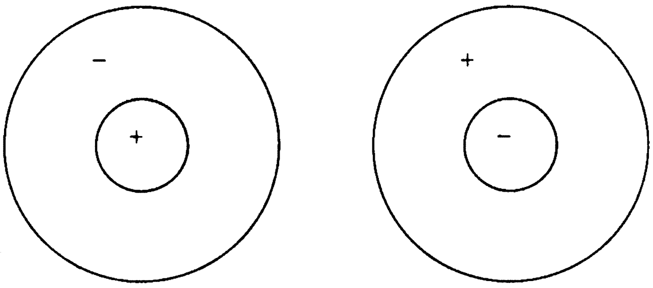

Figure 3

An 'off-centre' type of cell behaved in exactly the opposite manner, with a small centre that gave 'off' responses surrounded by a ring that gave 'on' responses. An 'off-centre' cell thus discharges at its highest rate in response to a black spot on a white background.

The two kinds of cell are intermixed and seem to occur in about equal numbers. The smallest spot of light that we can shine on the retina is likely to influence hundreds of ganglion cells, some 'off-centre' and some 'on-centre' because there is much overlapping of receptive fields. Bipolar cells have proved to have the same type of centre-surround receptive fields. The centre is supplied by direct input from a small group of receptors; the surround arises from an indirect path involving a greater number of receptors that feed into horizontal cells, which probably feed into bipolars. The indirect path could also be the result of the horizontal cells feeding back and inhibiting receptors.

David Hubel (1988), in his book entitled *Eye, Brain and Vision* asks 'Why should evolution go to the trouble of building up such curious entities as centre-surround receptive fields?' The way in which this question is phrased is typical of the thinking of neuro-biologists who are studying vision. It is impossible to speak as though the process has arisen by chance. So strong is the evidence of planning and purpose that 'evolution' must be personified and attributed with the ability to foresee needs and to design means of making them. Why, then, has God designed the retina to function using centre-surround receptive fields? It seems that the messages that the eye sends to the brain have little to do with the absolute intensity of light shining on to the retina. What the cells do signal, is a comparison of the amount of light hitting a certain spot on the retina with the average amount falling on the immediate surround. We can see a spot that is 2% brighter than the background, whether the background is dimly illuminated or brightly illuminated.

When we look at a large, uniformly lit spot, the interior seems as vivid to us as the border. However, the retinal ganglion cell is really only reporting information from the borders. This shows again how efficiently and cleverly the visual system is designed. The brain is somehow able to 'fill in' the interior and to enable us to see it vividly.

The retina, then, is analyzing the light coming in particularly in making comparisons. It is not merely registering the amount of light that is coming into the eye at any particular point. The example of the black and white television set illustrates this point. When a black and white TV set is turned off in a normally lit room it appears white or greyish-white. When it is turned on, certain parts of the screen become brighter but none become darker, and yet on the screen we see some vivid blacks. The blackest-looking part of the TV picture is sending to our eyes at least the same amount of light as it sends when the TV is off. In other words, 'black' and 'white' are not just physical concepts. They depend on the way in which our brain has been designed to function. Given that certain comparisons in light intensity have been registered by the retina, the brain has been programmed to interpret these comparisons and to produce a vivid visual experience for us. The same has proved to be true of our perception of colours as well. The mental gymnastics required to imagine how this might have come about by a random process of evolution stagger the imagination, yet it all makes perfect sense if a Designer who Himself is able to appreciate colour and form has designed us with the necessary equipment to do so as well.

Having been initiated and analyzed by the three layers of the retina, the visual messages now leave the eye and travel up the optic nerve towards the brain at the incredible speed of 300 mph. We shall see that the complexity of the retina is nothing compared to how the brain must be designed if it is to receive these messages and turn them into the amazing experience of seeing.

HUBEL, D.H. (1988) *Eye, Brain and Vision*, W.H. Freeman, p 55.

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News of Creation

The Fourth Creationist Congress August 22–25, 1990

A report by F. Peachey and N. Darrall

THIS EVENT was held at Gut Holmecke, Hemer Sauerland in Germany. Nine European countries were represented including Germany, the Netherlands, Britain, Sweden and France. In all, there were about 50 participants, including a small number from the USA and Canada. Thanks are due to Dr. David Rosevear of CSM who chaired the sessions and to Herr Meskemper and Wort und Wissen for their parts in organising the congress.

The programme was tightly packed with lectures on a wide range of topics, only a few of which can be included here. Information theory, various aspects of biochemistry, animal and human biology, early genealogies, sedimentology and the forces behind evolution were included in the conference and the topic of a geocentric universe was also considered and this generated much heated opposition.

A number of the lectures provided valuable arguments to support Biblical creation. Dr. Gitt spoke on 'Information, the Third Fundamental Quantity' and outlined the five levels at which information exists, including code form (syntax), meaning, intended action and purpose. The matter upon which the information can be found, whether paper, plastic computer discs, or DNA, is only the carrier and can never be a generator; a mental source—the thinking mind is required here. He argued that information is always transmitted by language and for the source of all information we were pointed to the Word (Logos). 'In the beginning was the Word ... and the Word was God ... all things were made by Him' (John 1:1–3).

Dr. Scherer discussed the molecular clock hypothesis in evolution. This hypothesis puts forward the view that the variation between macromolecules, such as hæmoglobin and cytochrome–c in different organisms, is directly related to the time since their evolutionary divergence, each change being equivalent to a tick of the clock. He showed that the assumption of a constant rate of change over time is not supported by measurements and the evidence from different organisms is that each type is separate and distinct, whilst intermediate forms are absent. He proposed a theory of molecular (micro-) evolution, which describes the change of molecules within each basic created type in a Biblical time framework and this theory was then supported with experimental evidence. A number of participants at the congress were concerned about the use of the word evolution to describe changes that have occurred within kinds since creation. It was agreed that this should not be a problem if we clearly understood that our use of the word did not in any way suggest the evolution of one kind from another but merely variation occurring within the God-prescribed limits. Some favoured the term micro-evolution to distinguish these differences from Neo-Darwinist evolution. Dr. Murris spoke on vestigial organs, including a discussion of the complex design of the foot of a horse, showing that these structures, far from representing evolutionary 'left-overs,' gave clear evidence of intelligent and purposeful design to living creatures. He concluded that evolutionist thinking obstructs real progress in science.

Mr. Junker provided useful insights into the ways biological changes could have occurred after the Fall, resulting in disease, deformity, suffering and death in the living world. He reminded us that the world that now exists, with its imperfections, is not as God originally created it and is quite different from the coming new creation for which the Christian waits. Support for the Young Earth Position was provided by Dr. Darrall from mitochondrial DNA studies in humans. Evidence from recent research indicates that it is possible for the whole of the human race to have originated from one original woman in the recent (in evolutionary terms) past. (Part of this information has already been published in *Origins*, in vol 2 issue 4.)

In a paper on the patterns of change in the earth's sedimentary rocks, Dr. Tyler first reviewed some of the major figures in geological history and their input into the framework within which observations on earth history are interpreted. He then discussed the global patterns that fit well with a catastrophic model and mention was made of recent moves towards such a position amongst geologists. The need to modify the Whitcomb and Morris model of Flood Geology was underlined and the ideas of Dr. Scheven on post-Flood mega-succession were endorsed. This final paper was followed by a visit to the only creationist museum in Europe, run by Dr. Scheven, where many useful exhibits of fossils and living plants and animals are available for study. Many expressed much appreciation for this unique resource and wished they could have spent several hours there.

Plans were announced to hold the next Congress in the U.K. in August 1992. This would be organised jointly by the Biblical Creation Society and the Creation Science Movement.

Editor's comments:—

In this short report it is not possible to do justice to all the presentations, but we hope to be able to publish some of the papers in future issues of 'Origins.'

Visitors are always welcome at the Creationist Museum in Germany; write for up-to-date information to Dr. Scheven, Unterm Hagen 22, Hohenlimburg, Hagen 5, D–5800.

Operation Congo

In Search of Living Dinosaurs

Where and who?

TO THE WEST OF ZAIRE lies the People's Republic of the Congo. The north of the country is dominated by the mainly unexplored Likouala swamp-forest, some 60,000 square miles in extent. Over the years enough evidence has emerged from the area to attract several international expeditions in search of living dinosaurs. The local people consistently describe the 'Mokele-mbembe' as having the long neck and tail of a classic dinosaur. Having learned his jungle-craft with the King's Own Scottish Borderers in Belize, Bill Gibbons organised a search in the region in 1986. His red hair and beard intrigued the local pigmies, and he managed to establish a better relationship with them than any previous outsider, with the exception of the missionaries who have worked tirelessly in tending to their medical and spiritual needs. He didn't find a sauropod but he did find a Saviour. In 1992 he is going back with a television crew, and an ironic double burden. Soon he may find dinosaurs thought long extinct, but soon the people he knows and loves may disappear, decimated by disease.

Roll Cameras!

In these times of recession, sponsorship for such a radical expedition is hard to come by. However, Geraldine Easter's production company 'Filmworks' is in the final stages of negotiations with 'Channel 4,' and should begin discussions with the Congo Republic's government in January 1992. Previously she has taken two evolutionists in search of the 'Chinese Wildman'. The International Society for Crytozoology had taken an interest, and their representative was balanced by an anthropologist who did not believe that a two-metre- tall, red-haired, pot-bellied ape, that was not an Orang Utan, could still remain undiscovered. However, hair samples provided by one group of witnesses have been analysed, and clearly belong to a primate, but not one that is on record. The two scientists were left wondering whether 'giganthropus', a large ape that has left skeletons throughout the Far East, is not in fact extinct. *'On the Trail of the Chinese Wildman'* was transmitted in the summer of 1990 as part of Channel 4's *'Adventures'* series. Geraldine admits to being far more sceptical about Congo dinosaurs though.

Why African Swamps?

In the Cameroon swamps to the north of the Congo Republic lives the Goliath frog, the size of a bulldog, weighing some seven kilograms and hopping up to four metres in one bound. The giant African land snail grows to a formidable size and is another indicator that there are ecological niches in Africa that favour unusually large creatures. Perhaps even Scripture can help us look in the right sorts of places. Consider God's words in one of the oldest books of the Canon. "Look at the behemoth which I made along with you and which feeds on grass like an ox. What strength he has in his loins, what power in the muscles of his belly! His tail sways like a cedar; the sinews of his thighs are close-knit. His bones are tubes of bronze, his limbs like rods of iron. He ranks first among the works of God, yet his Maker can approach him with his sword. The hills bring him their produce, and all the wild animals play nearby. Under the lotus plants he lies hidden among the reeds in the marsh. The lotuses conceal him in their shadow; the poplars by the stream surrounding him. When the river rages, he is not alarmed; he is secure, though the Jordan should surge against his mouth. Can anyone capture him by the eyes (or, 'by a waterhole'), or trap him and pierce his nose?" (Job 40:15-24, *NIV*).

Many a Bible has a footnote suggesting that the creature might be a hippopotamus or elephant, but when Scripture uses the image of the cedar of Lebanon it could not possibly be trying to characterise the minimal tails that these creatures possess. This passage is certainly in keeping with the accounts given by the local people of the creature they call Mokele-Mbembe. They also avoid stretches of river at certain times of day that has Molombo (Landolphia) growing along the bank. Its fruits are a favourite food of Mokele-Mbembe, and they have been seen with their forelegs on the bank, reaching up into the foliage to get to them. It is interesting to note that analysis of coprolite (fossilised droppings) around a dinosaur nest site in the U.S. has brought to light the seeds of fruits and berries.

A people in need

Bill Gibbons is going to have to draw upon his close relationship with the local people when he returns, as they have been subject to broken promises by previous expeditions. There are many taboos associated with the creatures and not everyone is prepared to talk about them. It is encouraging though that those independent witnesses that will speak, give a consistent description. Bill is also determined to take medical supplies and mechanical spare-parts back with him to help Gene and Sandy Thomas, the missionaries who led him to the Lord and baptised him in the river. Only relatively recently have the pygmies who live deeper in the swamp-forest begun to seek help from them, because of a worsening disease problem. Leprosy is rife, as are sleeping sickness, yellow fever and cholera. If anyone would like to make a donation to the aid-work, Bill's address is below. The one member of the expedition that is not finalised yet is the doctor. If you are suitably qualified in tropical medicine, and might be able to go, please get in touch. We will publish more information as the expedition plans develop.

Contact: Operation Congo, c/o BCS, PO Box 22, Rugby, Warwicks. CV22 7SY.

The Back to Genesis Tour

October 1990

A Report by Peter Senior

FROM the 10th until the 28th of October last year Ken Ham and Professor John Rendle-Short toured the country, speaking in churches, universities and Bible colleges. The tour was organised on behalf of the Institute for Creation Research (California) and the Creation Science Foundation (Australia) by Graham Scott (Creation Magazine UK Ltd) and myself.

Ken was a founder of the Australian society, and developed a fruitful ministry that brought him to the attention of the American Institute for Creation Research. Working for them, he developed the 'Back to Genesis' programme, which has had him touring the length and breadth of the United States. The essence of his message is that the historical events of Genesis chapters 1 to 11 are the foundation of the Gospel. One man, Adam was the cause of our lost spiritual condition, and one God/man, our Lord Jesus Christ is the cure for it. The Gospel is disastrously undermined if there is any compromise as to the historical reality of either. The power of Ken's message is that he can clearly explain this to ordinary Christians, who do not regard themselves as sophisticated theologians or scientists.

There are a number of questions that have always arisen whenever, and wherever he has advocated a straightforward reading of Genesis as history, especially with respect to dinosaurs and Noah's Flood. Over the years Ken has collected a stack of colourful photographs and diagrams, presented as overhead transparencies, which provide the answers. All the textbooks in the world that claim that fossilisation takes many thousands of years, cannot stand against what was once a felt hat. It was recovered from an abandoned Australian mine after approximately one hundred years, and is as mineralised as any dinosaur bone. The small size of dinosaur eggs also show that large dinosaurs are necessarily very old dinosaurs. The juvenile would easily fit into the ark, and if they were subject to a decline in lifespan after the flood proportional to that recorded for mankind, they would never again reach quite the size of their fossilised forebears.

After the fast pace at which Ken necessarily had to cover a lot of ground in his lectures, Professor John Rendle-Short's quiet consideration of a variety of theological topics, was an ideal contrast throughout the tour. Many people were surprised that the son of Professor Arthur Rendle-Short (1880–1953), who had written about the providence of God in using evolution, should be a creationist. Indeed John did not reach this position until middle-age (he is now in his seventies). A telling point that he made in his testimony is that he was fortunate that in being a professor of paediatrics, he had not included any talk of evolution in his teaching over the years. He said that he could understand the potential for mental conflict in prominent Christians who have tried to marry evolution and the Word of God. Perhaps their subconscious protects them, in not letting them realise the damage that they have done in causing so many young minds to stumble. A few years ago John acquired some of his father's last sermon notes. He was much moved to discover from them, that Arthur Rendle-Short had also come to reject evolution as contrary to the doctrine of the Fall, and therefore equally incompatible with the Gospel.

In three weeks we managed a punishing schedule, ranging from Capenwray Hall in the north *via* Leeds, Manchester and Liverpool to several meetings around Northern Ireland. Oxford and Cambridge were followed by Swindon, Bridgwater, Cardiff and finally the Metropolitan Tabernacle. However, these were just the main meetings. Numbers attending ranged from a rare minimum of around one hundred to a figure of at least six hundred in Cardiff. The average attendance was in the region of two hundred and fifty. Several generous donations, and the sale of books and tapes, covered our car-hire and fuel costs, along with the international air-fares of the speakers, and their flights to and from Ulster (Graham took the books on the ferry).

In the Old Testament several kings are recorded as trying to lead to the people back to God, but their efforts were qualified by the statement 'but the high places were not removed.' God had given clear instructions as to the place of sacrifice in the Jerusalem temple, but undoubtedly most people saw no harm in 'modern' worship on the hilltops. By the end of the tour many Christians had come to realise that history would record that in the twentieth century, a large number of the people of the Second Covenant had equally compromised their faith, with pagan evolutionary myths, despite the clear historical narrative in Genesis.

It is possible that Ken will be back in 1992, but in the mean time do write to the BCS P.O. Box address if you would like to organise a meeting. By putting you in contact with local speakers, no gathering need be considered too small.

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